Port of Gladstone
Gatcombe and Golding Cutting Channel Duplication Project

Environmental Impact Statement

Gladstone Ports Corporation
Growth. Prosperity. Community.

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Appendix Q4
EIS commitments

Gatcombe and Golding Cutting Channel Duplication EIS commitments

EIS commitment number (EIS section reference)	EIS commitment
2. Project description	
2.1 (Section 2.4.4.2)	The final dredging methodology adopted for the Project will be subject to MSQ Regional Harbour Master acceptance of the successful dredging contractor's detailed execution plan. The dredging contractor will also need to comply with MSQ's *Standard for Commercial Marine Activities – Gladstone Region* (DTMR 2017a).
2.2 (Section 2.5.7.3)	Monitoring of line and level during construction of the reclamation area bund wall will identify any areas of settlement. Additional rock can then be easily added to maintain the required coverage.
2.3 (Section 2.5.7.3)	A stockpile of armour material will be held at the quarry, sufficient to cover any exposed core material if a cyclone were to approach Gladstone. The construction contractor will prepare an emergency plan which will include procedures to address severe climatic events such as cyclones and minimise where practicable, the potential environmental impacts from the reclamation works.
2.4 (Section 2.5.7.4)	Additional rock protection will be required on the inner face of the bund on top of the geotextile to provide additional protection from wave action generated by standing water within the sediment ponds or placement of dredged material during operation.
2.5 (Section 2.5.8)	Geotextile material will be placed against the inner face of all of the outer bund walls. The purpose of the geotextile material is to minimise the migration of dredged material fines through the bund wall to the marine waters of Port Curtis.
2.6 (Section 2.5.8)	The geotextile material will be non-woven and will generally comply with the specification or acceptable equivalent below. ■ Weight > 542g/m^2 ■ Tensile strength > 1,690N ■ Trapezoidal tear > 644N ■ Puncture resistance > 1,070N ■ Permittivity < 0.7sec^{-1} ■ Apparent opening size < 0.150mm.
2.7 (Section 2.5.8)	The placement and restraint of the geotextile liner will be specified in the detailed design phase of the reclamation bund wall and will meet industry best practice, recognised industry standards and the relevant findings of the *Gladstone Bund Wall Independent Review*, including: ■ Be placed on the inner bund wall material and then be overlaid and secured by core material (up to 300mm thick layer) ■ Be laid on the bund wall such that no wrinkles, gaps, folds or deformations occur in the material, with all joints sewn to create seams and to conform to the requirements of AS3706: (Geotextiles – Methods of Test). Overlaps in the fabric will be directed vertically down the slope of the bund surface. ■ The geotextile will be secured in place and protected with a 300mm thick layer of core material.
2.8 (Section 2.5.10)	The internal dewatering cells in the reclamation areas will be designed to ensure the surface area and volume is large enough, and the detention time is sufficient to meet the required decant water quality licenced discharge limit (i.e. less than or equal to 100mg/L).

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2.9 (Section 2.5.11)	All floating plant and associated moorings will be kept clear of navigational channels when working or moored. The moorings will be marked in accordance with the requirements of the Regional Harbour Master or representative. Navigational lights, buoys, marks and any warning signs which the Regional Harbour Master considers necessary, will be supplied, installed and maintained. All navigational aids will be constructed and operated in accordance with the requirements of the Regional Harbour Master or representative. All marine plant and equipment used during the dredging and dredged material placement activities will: ■ Comply with the TOMSA and the *Transport Operations (Maritime Safety) Regulation 2004* ■ Comply with all the requirements of 'Standards of Marine Construction Activity within Gladstone Harbour' ■ Be maintained to minimise the discharge of noxious fumes and pollutants.
2.10 (Section 2.6.2)	Sewage generated by the dredger activities is to be disposed of in a controlled manner, in authorised and designated areas or through approved service as per the *Port Procedures and Information for Shipping – Gladstone* (DTMR 2018).
2.11 (Section 2.6.5.1)	No major hazardous materials to be transported, stored and/or used within the Project site.
2.12 (Section 2.6.5.2)	The collection of tank washing slops, oily bilge water and oily mixtures containing chemicals, oil sludge and sewage will be provided by Nationwide Oil Pty Ltd, while garbage sterilisation and disposal will be provided by GPC as per the *Port Procedures and Information for Shipping – Gladstone* (DTMR 2018). Management of waste from dredging vessels will comply with the relevant waste management legislation and guidelines.
2.13 (Section 2.6.5.2)	Solid waste will be temporarily stored onsite, in accordance with the relevant legislation and guidelines, and regularly collected by a licenced waste disposal contractor and, where recycling is not feasible, transferred to a licenced waste facility within the GRC area (e.g. Benaraby Landfill).
2.14 (Section 2.6.5.2)	All sewage and greywater will be temporarily stored onsite in accordance with the relevant waste management legislation and guidelines and removed and transported to the GRC sewage treatment plant by a licenced waste management contractor.
2.15 (Section 2.6.5.2)	All vessels arriving at the Port of Gladstone are required to follow the DTMR's *Port Procedures and Information for Shipping – Gladstone* (DTMR 2018), which details quarantine requirements.
2.16 (Section 2.6.5.2)	Upon arrival within the Port of Gladstone, all wastes, including quarantine waste, from the dredging vessels will be arranged for collection and disposal. Quarantine waste will be kept in sealed plastic bags on board until collection by a licenced contractor (e.g. liquid waste, oil containing waste and sewage) or GPC (general garbage) (DTMR 2018). Quarantined waste will be sterilised prior to disposal at a licenced facility.
2.17 (Section 2.7)	The navigational aid relocation and installation methodology will be confirmed and approved by MSQ prior to work commencing.
2.18 (Section 2.7)	Outer BUF and bund wall warning lights will be installed every 100m along the outer BUF and WBE seaward reclamation area bund wall in accordance with MSQ requirements.
2.19 (Section 2.7)	Following the completion of the filling operations within the WB and WBE reclamation areas, GPC will undertake surface stabilisation works for the portion of the reclamation area that has achieved the final design surface level. These works are likely to include capping the final surface with material of an appropriate grade or vegetating with appropriate species.
2.20 (Section 2.8)	Maintenance activities within the reclaimed area will be undertaken to minimise dust and erosion as required.
2.21 (Section 2.10)	The seaward bund walls to be designed to 100 year average recurrence interval (ARI) immunity and the detailed design will include allowances for storm surge, sea level rise, wave climate, and flood levels within this part of Port Curtis

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2.22 (Section 2.10)	Use of internal cells and adjustable weir boxes within the WB and WBE reclamation areas to allow retention of dredged tailwaters and settling of suspended solids
2.23 (Section 2.10)	Implementation of adaptive design measures during the detailed design phase for the Project to minimise the potential impacts on the ecological values of Port Curtis
2.24 (Section 2.10)	Dredger equipment and dredging methodology will be selected on the basis of dredger availability, the nature of the material to be dredged, consideration of environmental impacts, and minimisation of dredging timeframes
2.25 (Section 2.10)	Dredging operations will be undertaken during suitable conditions (i.e. within the operational parameters of the dredger, for example not during high energy situations such as storm surges). If the Bureau of Meteorology (BoM) issues a severe weather warning, dredging works within the affected area to cease.
2.26 (Section 2.10)	The barges will be fitted with 'green valves' in the overflow pipe to control the amount of air contained in the excess water in order to reduce turbidity. Overflow discharge will be managed using a computer-based management system to prevent excessive overflow discharge.
2.27 (Section 2.10)	Dredger heads will be fitted with fauna exclusion devices, including but not limited to, turtle deflector/exclusion device
2.28 (Section 2.10)	Below keel discharge of tailwaters will be via an anti-turbidity control valve
2.29 (Section 2.10)	Vessels will have on-board systems for determining the density of dredged material (or solid to water ratio)
2.30 (Section 2.10)	Vessel will have electronic positioning system for defining the location and depth of dredging activities
2.31 (Section 2.10)	When the drag head is not in contact with the seabed, and pumps are in operation, pump speed will be reduced and the drag head water jets activated to minimise the risk of turtle capture
2.32 (Section 2.10)	Stormwater management system will form part of detailed design of the WBE reclamation area which will include drainage systems and stormwater treatment measures to manage runoff and minimise discharge of sediment laden and turbid waters into Port Curtis
2.33 (Section 2.10)	At the completion of filling of the reclamation area, the retention of a large stormwater pond to manage stormwater quality runoff from the final surface
2.34 (Section 2.13)	All Project wharf users will meet the First Point of Entry Biosecurity Standards which describe the requirements for landing. In addition, all Project wharf users operating at GPC's multiuser wharves/berths will comply with GPC's biosecurity procedure, guide, training and reporting.
2.35 (Section 2.13)	Dredging equipment will conform to Australian Quarantine and Inspection Services (AQIS) Guidelines to minimise the risk of the introduction of any introduced marine species.

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2.36 (Section 2.13)	In the event that marine pests are introduced into the local environment by the Project, the dredging contractors' Ballast Water Management Plan will be implemented in accordance with the Australian Ballast Water Management Requirements (Version 7) (Commonwealth Government 2017) and under the Project and Dredging EMPs. The management plans will include contingency measures that include, but are not limited to, the following: ■ Immediate notification to DAF (Biosecurity Queensland), Department of Agriculture and Water Resources, DES and MSQ ■ Follow any directions or notices given by a regulator in relation to marine pests ■ Corrective actions (i.e. immediate investigation strategies, holding the balance of ballast on board, transferring the balance between tanks, examining ship to shore transfer options, etc.) ■ Consequential reporting/liaison requirements.
2.37 (Section 2.14)	There are a number of security requirements potentially relevant to the Project, including: ■ The Maritime Security Identification Card, which is a nationally recognised identity card which identifies the holder as a person who has met the necessary background requirements to work in a maritime security zone. It shows that the holder has met the minimum security requirements to work unescorted or unmonitored in a maritime security zone and is not considered a threat to maritime security. ■ Security access requirements (i.e. maritime security levels, landside restricted zones and security restricted zones) ■ Port inductions for contractors, Port users, consultants and essential services.
2.38 (Appendix Q1)	All dredging equipment will be operated and maintained in a safe and efficient manner to ensure that water quality impacts and noise levels generated comply with manufacturer specifications.
2.39 (Appendix Q1)	Prior to dredging, equipment will be inspected to ensure that all required measures are being adopted to reduce potential impact to marine fauna and associated habitats.
2.40 (Appendix Q1)	Dredging activities will be restricted to the Project's approved areas and depths.
2.41 (Appendix Q1)	No waste (including sewage) will be released to the environment, stored, transferred or disposed contrary to any conditions of Project approvals.
2.42 (Appendix Q1)	Waste generated during dredging will be stored, handled and transferred in a proper and efficient manner to prevent environmental harm.
2.43 (Appendix Q1)	TSHD vessels will be fitted with electronic logging, and the logs must be available to GPC and DES on request
2.44 (Appendix Q1)	TSHD vessels will be fitted with computer based equipment for the management of overflow (i.e. to prevent excessive discharge)
2.45 (Appendix Q1)	The minimum technical design standards and conditions of the TSHD will be supported by appropriate certification, including photographs, provided to DES prior to the commencement of use.
2.46 (Appendix Q1)	No blasting will be undertaken under this Dredging EMP. If blasting is needed, the Dredging EMP will need to be amended to include or reference a detailed blasting management plan approved by DES
2.47 (Appendix Q1)	All equipment will be turned off when not in use
2.48 (Appendix Q1)	All equipment on the dredge will be operated and maintained in a safe and efficient manner to ensure that generated noise complies with manufacturer specifications

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2.49 (Appendix Q1)	Navigational lights, buoys, marks and any warning signs, which the RHM considers necessary, will be supplied, installed and maintained. All navigational aids must be constructed and operated in accordance with the requirements of the RHM or representative.
2.50 (Appendix Q1)	All flood lighting or other lighting, except navigational lighting, installed on the structure or surrounds will be constructed in accordance with the requirements of the RHM or representative
2.51 (Appendix Q1)	All marine plant and equipment used by the construction contractor will comply with all the requirements of 'Standards of Marine Construction Activity within Gladstone Harbour' as published on the MSQ website (www.msq.qld.gov.au).
2.52 (Appendix Q1)	All marine plant and equipment used by the construction contractor will be maintained to minimise the discharge of noxious fumes and pollutants.
2.53 (Appendix Q1)	The dredging contractor will comply with the relevant requirements within the following documents: ■ Transport Operation (Marine Safety) Act 1994 and the Transport Operations (Marine Safety) Regulation 2016 ■ Standard for Commercial Marine Activities – Gladstone Region and preparation and implementation of the approved Project Marine Execution Plan ■ Port Procedures and Information for Shipping – Gladstone
2.54 (Appendix Q1)	Any material which is deposited outside the alignment of the works shown in Figures 7.1 to 7.4, or any debris which falls or is deposited into tidal waters during the dredging will be removed by the construction contractor at its cost and expense prior to the practical completion of the works.
3. Land use and tenure	
3.1 (Section 3.4.2.3)	Any changes required to the tenure arrangements will be progressed by GPC following completion of the Project EIS process and will be finalised prior to the lodgement of development applications associated with the BUF and WBE reclamation area.
3.2 (Section 3.6.1)	Native Title will be required to be addressed as part of any future process to have the tenure of the USL within the BUF and WBE reclamation area converted from USL to leasehold in accordance with the provisions of the Land Act. Regard to the existing ILUA will be necessary should GPC seek freehold title over the land.
3.3 (Section 3.6.1)	GPC will comply with existing lease conditions associated with Lot 508 on SP239687 (associated with the placement of dredged material within the WB reclamation area and the portion of the WBE reclamation area (southern area)), together with any future lease conditions issued by the State for the WBE reclamation area. Existing lease conditions for Lot 508 on SP239687 will continue to apply once the land has been reclaimed for SPL purposes until such time as it is amended or surrendered and a new lease is granted from the State or the tenure is converted to freehold land.
3.4 (Section 3.6.1)	GPC will apply to have tenure granted over the WBE reclamation area to support the land being gazetted as SPL under TIA.
4. Visual amenity	
4.1 (Section 4.7)	Control measures will be implemented during construction to ensure construction activities do not disturb the existing vegetation along the shoreline adjacent to the WB and WBE reclamation areas

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4.2 (Section 4.7)	The Project site will be kept tidy at all times. Materials and machinery will be stored tidily during works and will be removed in a timely manner when no longer required. Roads providing access to the site and work areas will be maintained free of dust and mud as far as is reasonably practicable.
4.3 (Section 4.7)	Dredging vessels will have minimal and low-glare lighting, consistent with maritime safety standards.
5. Topography, geology and soils	
Acid sulfate soils	
5.1 (Section 5.6.1.1)	An ASS Management Plan will be prepared at least three months prior to the commencement of construction to detail site-specific management measures for all stages of construction on the Project (i.e. bund wall and BUF construction, dredging activities and placement of dredged material). The ASS Management Plan will be developed in accordance with the Queensland Acid Sulfate Soils Technical Manual (Dear et al. 2014).
Bund wall and barge unloading faciality construction	
5.2 (Section 5.6.1.3)	During detailed design, the WB and WBE reclamation areas groundwater will be modelled to determine the predicted permanent groundwater table in order to include PASS below this level (i.e. the safe PASS reinternment level (SPRL))
5.3 (Section 5.6.1.3)	Design specifications will avoid disturbance of marine and terrestrial surface and subsurface soils, where practical. Where disturbance is unavoidable, the design specification will endeavour to minimise the disturbance footprint.
5.4 (Section 5.6.1.3)	Key construction personnel will be provided mandatory training in the identification and control procedures for ASS. A register of construction personnel who have completed the relevant ASS training will be maintained.
5.5 (Section 5.6.1.3)	To prevent the oxidation of PASS material through the potential creation of a 'mud wave' during bund wall construction: ■ Unconsolidated materials (i.e. the mud wave, if generated) above the mean high water neap will be excavated and contained separately in a designated treatment area ■ Excavated materials will be tested by a National Association of Testing Authorities accredited laboratory for SPOCAS and treated with the required amount of aglime ■ Sediments will be validated at a rate of 1 sample/1,000m^3, prior to re-instatement into the reclamation area. Validation shall confirm, using SPOCAS analysis, that the sediment has no potential acidity. The laboratory calculated liming rate is < 1kg $CaCO_3$/tonne.
5.6 (Section 5.6.1.3)	Material within the bund walls will be re-distributed as required so that it remains permanently under water where practicable, or if exposed to the atmosphere for a significant length of time, it is treated appropriately in compliance with the ASS Management Plan.
5.7 (Section 5.6.1.3)	Daily inspection of the base of the bund wall for potential impacts of mud wave, resulting in soil being excavated above the natural level and exposed to oxygen. Should daily inspections observe excavated soil above the natural level, this material will be collected and transported to a containment area for treatment.
5.8 (Section 5.6.1.3)	Removal of intertidal vegetation will be restricted to the minimum required, to enable the safe construction and operation of the WBE reclamation area, including minimising disturbance to ecologically sensitive areas, such as adjacent seagrass and mangrove communities.
5.9 (Section 5.6.1.3)	Any mangroves will be removed at ground level, with roots left in-situ (where practical), to maintain soil stability and reduce sediment disturbance.

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5.10 (Section 5.6.1.3)	Regular auditing will be undertaken to confirm that bund wall construction is carried out in accordance with the defined requirements set out in the ASS Management Plan and associated management documentation.
5.11 (Section 5.6.1.3)	The design specification will not be approved where it does not demonstrate an attempt to avoid, or minimise, the disturbance to ASS material.
5.12 (Section 5.6.1.3)	Bund wall construction will not commence until an ASS Management Plan has been prepared and approved for implementation during all phases of the Project.
5.13 (Appendix Q2)	Groundwater monitoring for acidity will occur on a regular basis, with samples analysed for: ■ Field measurements: water level, pH, electrical conductivity, redox potential and total alkalinity ■ Laboratory analysis: pH, electrical conductivity, total titratable acidity, total alkalinity, dissolved iron and aluminium and dissolved ions (chloride and sulphate)
5.14 (Section 5.6.1.3)	In the event of an incident relating to the release of acid leachate, runoff or sediment occurring: ■ The GPC Environment Manager will be notified as soon as practicable, as per the Dredging EMP (refer Appendix Q1) ■ The area will be identified and hydraulically isolated using suitable mitigation measures ■ The runoff/sediment will be treated with an adequate quantity of fine aglime and samples analysed for pH. Runoff/sediment to have a pH between 6.5 and 8.5 prior to release. ■ An investigation into the cause of the incident will be conducted, and a review of the mitigation measures initiated.
5.15 (Section 5.6.1.3)	All records and associated permits will be provided to the relevant authority as required, upon request and/or at the completion of construction activities.
Dredging activities and placement of dredged material	
5.16 (Section 5.6.1.4)	The dredged material will remain in a saturated state in the barges to minimise the potential for oxidation of PASS. Dredged material will not be stored in the barges or trucks for more than 24 hours and will be kept saturated.
5.17 (Section 5.6.1.4)	Dredging of identified 'hot spot' areas will occur within the early stages, where practicable, to allow strategic placement of sediments containing PASS (refer Figure 5.5 and Figure 5.7 in the EIS), within the safe PASS reinternment level (SPRL).
5.18 (Section 5.6.1.4)	Dewatering and lowering of the water table within the WB and WBE reclamation areas will be avoided to maximise the volume of sediment that remains saturated
5.19 (Section 5.6.1.4)	Any runoff from the WB and WBE reclamation areas (sediment above water level) will be directed towards a series of internal ponds and tested (for pH, metals, etc.) prior to discharge into Port Curtis via the licenced discharge point. Decant water to be discharged into Port Curtis is to have a pH between 6.5 and 8.5 and adjustments will be made to the pH prior to licenced releases, should the water within the WBE reclamation area be too acidic or alkaline. Other decant water release limits are provided in Chapter 6 (sediment quality) and the Project Environmental Monitoring Procedure (refer Appendix Q3).
5.20 (Section 5.6.1.4)	Ongoing validation sampling of sediments above LAT within the WB and WBE reclamation areas (at a rate of 1 sample/1,000m3), and treatment of PASS materials if required. Validation will confirm, using SPOCAS analysis, that the sediment has no potential acidity. The laboratory calculated liming rate is < 1kg CaCO3/tonne.

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5.21 (Section 5.6.1.4)	Validation testing of the sediments placed above LAT at a rate of 1 sample/1,000m3 after placement in the WB and WBE reclamation areas will be conducted to confirm sediments have sufficient buffering capacity. If samples fail the validation testing, then additional sampling will be conducted to determine extent and location of the ASS material. Management options will be assessed on a case by case basis but will include containment, treatment and validation as per the ASS Management Plan.
5.22 (Section 5.6.1.4)	Daily monitoring of water quality (e.g. pH, dissolved oxygen, etc.) within internal ponds.
5.23 (Section 5.6.1.4)	Daily inspection of surface waters, and stormwater drainage, in the vicinity of the site, for evidence of impacts, resulting from disturbance of ASS (e.g. fish kill, aquatic/riparian flora mortality and/or iron staining)
5.24 (Section 5.6.1.4)	The visual monitoring plan and checklist provided in the ASS Management Plan will be used to identify signs of ASS oxidisation, including: ■ Unexplained scalding, degradation, or death of vegetation ■ Unexplained death, or disease, in aquatic organisms ■ Formation of the mineral jarosite, and other acidic salts, in exposed or excavated soils ■ Areas of blue-green water, or extremely clear water, indicating high concentrations of aluminium ■ A transition to, or establishment of, a community dominated by acid tolerant species ■ Rust coloured deposits on plants, or on the banks of drains, water bodies, and watercourses, indicating iron precipitates ■ Black, to very coloured waters, indicating de-oxygenation ■ Sulfurous (rotten egg gas) smells ■ Corrosion of concrete, and/or steel structures, in contact with soil or water ■ Invasion of a community, or area, by acid tolerant species.
5.25 (Section 5.6.1.4)	Weekly reports will be completed onsite for the duration of construction activity and will incorporate any identification of ASS
5.26 (Section 5.6.1.4)	In the event of an incident relating to the release of acid leachate, runoff or sediment occurring: ■ The GPC Environment Managerwill be notified as soon as practicable, as per the Dredging EMP (refer Appendix Q1) ■ The area will be identified and hydraulically isolated using suitable mitigation measures ■ The runoff/sediment will be treated with an adequate quantity of fine aglime and samples analysed for pH. Runoff/sediment to have a pH between 6.5 and 8.5 prior to release. ■ An investigation into to the cause of the incident will be conducted, and a review of the mitigation measures be initiated.
Stabilisation and maintenance activities on the reclamation area	
5.27 (Section 5.6.1.5)	Establishment of a groundwater monitoring network and monitoring plan for the WB and WBE reclamation areas once dredged material placement and earthworks have been completed and the WB and WBE reclamation areas are stable. Groundwater monitoring piezometer installation will not be undertaken during the construction of the WBE reclamation area as piezometers are likely to be broken/demolished if installed prior to finalisation of earthworks.

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5.28 (Section 5.6.1.5)	Groundwater monitoring for acidity will occur on a regular basis, with samples analysed for: ■ Field measurements: water level, pH, electrical conductivity, redox potential and total alkalinity ■ Laboratory analysis: pH, electrical conductivity, total titratable acidity, total alkalinity, dissolved iron and aluminium and dissolved ions (chloride and sulphate).
5.29 (Section 5.6.1.5)	Monitoring parameters and provisional limits for groundwater will be based on established 'baseline' values and set at: ■ pH – outside 6.5 to 8.5 ■ Acidity – < 40mg/L ■ Alkalinity – > 60mg/L.
5.30 (Section 5.6.1.5)	If the pH of groundwater falls outside the 'baseline values', the following steps will be undertaken: ■ Initially increase monitoring frequency at affected location(s) to fortnightly until corrective measures are implemented or parameters return to within performance criteria ■ If the performance criterion in groundwater wells is not being met after two months, and the non-compliance cannot be attributed to short term heavy rainfall or external influences, consideration will be given to the installation of lime cut off trench or other additional treatment measures in consultation with the GPC Environmental Manager.
Erosion, sediment control and contamination management	
5.31 (Section 5.6.2)	The rock obtained from the Targinnie/Yarwun quarry area for the construction of the bund walls will be screened at the quarry site to remove the fine fraction (< 20mm) to reduce the likelihood of turbid plumes from the introduction of fines into Port Curtis.
5.32 (Section 5.6.2)	Preparation of an erosion and sediment control plan by a suitably qualified and experienced professional in accordance with the requirements of the International Erosion Control Association Guidelines (2008)
5.33 (Section 5.6.2)	Vegetation of the final reclamation area with suitable vegetation to prevent wind erosion of the surface.
5.34 (Section 5.6.2)	All maintenance, servicing and re-fuelling of vehicles and equipment will be undertaken offsite
5.35 (Section 5.6.2)	Daily inspections of all plant and machinery will be conducted
5.36 (Section 5.6.2)	Spill kits will be provided at the site, near where equipment is being used, and staff will be trained in the use of spill kits
5.37 (Section 5.6.2)	If a spill occurs, this will be cleaned up immediately with appropriately absorbent materials with the area remediated if required
5.38 (Section 5.6.2)	Oils, fuels, chemicals and hazardous materials will be stored in clearly designated and appropriating bunded storage areas, located as far as practicable from marine waters. The storage areas will be covered to prevent stormwater infiltration.
7. Coastal processes and hydrodynamics	
7.1 (Section 7.5)	A monitoring program will be implemented to observe the changes in velocity and sediment dynamics in the channels adjacent to the WBE reclamation area and BUF, and will be designed to trigger management actions to be implemented as required.

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8. Water quality	
8.1 (Section 8.7)	No construction activities will be initiated prior to obtaining DoEE and DES approval of the Project EMP, Dredging EMP and Project Environmental Monitoring Procedure
8.2 (Section 8.7)	All activities will comply with the approved Project EMP, Dredging EMP and Project Environmental Monitoring Procedure to minimise impacts on water quality, associated with the health of marine flora and fauna values
8.3 (Section 8.7)	No exceedance of the seagrass time to impact light threshold levels as specified in the Project Environmental Monitoring Procedure
8.4 (Section 8.7)	Compliance with all Commonwealth and State Government approval conditions and Project management plans relevant to the Project works
8.5 (Section 8.7)	Achieve the performance criteria outlined in the Project EMP and Dredging EMP
8.6 (Section 8.7)	An appropriate response will be implemented where monitoring determines that the water quality trigger levels have been exceeded or seagrass light thresholds are found to be compromised by Project activities
8.7 (Section 8.7)	All wastewater will be adequately contained and treated before being discharged into the receiving waters, including gross pollutant and sediment removal. All reasonable and practicable measures will be implemented to prevent pollution resulting from silt runoff, oil and grease spills from machinery, concrete truck washout and the like.
Establishment of the Western Basin Expansion reclamation area and barge unloading facility	
8.8 (Section 8.7)	The detailed design phase of the WBE reclamation area bund wall and BUF will adopt the following into the design and construction methodology process and construction specification: ■ Industry best practice ■ Lining of the inner face of the bund wall of the WBE reclamation area and BUF bund walls with geotextile fabric to reduce the migration of fines through the bund walls ■ Geotextile materials designed to filter sediment will be: – Placed on the inner bund wall material and then be overlaid and secured by core material – Keyed into the rock armour material to prevent slippage and deformation from occurring prior to placement of the core material – Laid on the bund wall such that no wrinkles, gaps, folds or deformations occur in the material, with all joints sewn to create seams and to conform to the requirements of Australian Standards 3706: Geotextiles – Methods of Test. Overlaps in the fabric should be directed vertically down the slope of the armour material. ■ Use of internal cells and adjustable weir boxes within the WBE reclamation area will allow retention of dredged tailwaters and settling of suspended solids ■ Incorporate the findings and recommendations of the independent review of the WBDDP bund water performance (Appendix D) ■ Incorporate the findings of the Project EIS geotechnical investigations and additional geotechnical investigations that will be undertaken for the WBE reclamation area and BUF during the detailed design phase of the Project ■ Stormwater management system will form part of the detailed design of WBE reclamation area and BUF, which will include drainage systems and stormwater treatment measures to manage runoff and minimise discharge of sediment laden and turbid waters into Port Curtis

EIS commitment number (EIS section reference)	EIS commitment
	■ Groundwater modelling and piping investigation will be undertaken during the detailed design phase of the Project. The findings of the modelling and investigation will be incorporated into the design and construction methodology and specification.
8.9 (Section 8.7)	Core material (up to 300mm) and dredged material to be used against the outer bund wall geotextile material
8.10 (Section 8.7)	Removal of fines < 20mm from bund material prior to placement
8.11 (Section 8.7)	Maximum unarmoured length of 50m will be maintained during construction
8.12 (Section 8.7)	Sufficient armoured material will be held in reserve for placement in the event of a storm or approaching cyclone
8.13 (Section 8.7)	Implement the Project Environmental Monitoring Procedure to manage potential impacts on water quality
8.14 (Section 8.7)	Appropriate design and construction of bund, including: ■ All reasonable and practicable measures will be implemented to prevent pollution resulting from silt runoff, oil and grease spills from machinery, concrete truck washout and the like ■ No refuelling or maintenance of construction equipment will occur on the site, nor will equipment be parked at the site for a significant time, reducing the potential for significant spills of oils and fuels to occur ■ No waste, other than reclamation decant water, will be released into the marine environment or adjacent vegetation communities ■ Spill kits for land and water based spills (including hydrocarbon absorbent booms) will be kept at the site and personnel trained in their use. Emergency response procedures will be established. ■ Adherence to waste management controls identified in the Project EMP ■ Monitoring and management of any material that is displaced above LAT will be undertaken in accordance with the ASSMP ■ All construction equipment will undergo regular maintenance and pre-start inspections. Equipment and vehicles will not be parked at the site for a significant time, when not in use. ■ Powered Mobile Equipment (PME) will be suitable and rated for the task and kept in good working order ■ A PME preventative maintenance regime will be implemented.
Dredging activities	
8.15 (Section 8.7)	Implement the approved Dredging EMP and Project Environmental Monitoring Procedure during all dredging works
8.16 (Section 8.7)	Where practical scheduling the timing of dredging to reduce the potential likelihood for turbid plumes to impact on sensitive receptors such as avoiding the late spring and early summer periods (together with other less extreme summer periods), which represent key periods for seagrass growth and resilience building
8.17 (Section 8.7)	Dredging operations will be undertaken during suitable conditions (i.e. within the operational parameters of the dredger, for example not during high energy situations such as storm surges). If the BoM issues a severe weather warning, dredging works within the affected area will cease.
8.18 (Section 8.7)	Dredger and work boats sailing routes to be optimised to reduce the generation of propeller wash
8.19 (Section 8.7)	The dredger will operate within the approved dredging footprint at all times
8.20 (Section 8.7)	The TSHD and barges will carry out adaptive management measures depending on results of water quality monitoring (i.e. reduce overflow, move location, etc.)

EIS commitment number (EIS section reference)	EIS commitment
8.21 (Section 8.7)	Decant water will be treated in decanting ponds constructed at the WBE reclamation area. All decant water will be treated to meet the water quality limits outlined in the ERA 16 approval and Project Environmental Monitoring Procedure prior to being released at the licensed discharge points.
8.22 (Section 8.7)	No decant water will be discharged prior to water monitoring in accordance with the Project Environmental Monitoring Procedure and the ASSMP. If required, lime dosing of decant water within the WB and WBE reclamation areas in accordance with the ASSMP.
8.23 (Section 8.7)	In the event that discharge occurs, or is likely to occur, at other than the approved and monitored discharge point, dredging will stop
8.24 (Section 8.7)	Overflow levels to be raised to the highest allowable point during sailing from the channel duplication area to be dredged to the BUF to ensure spillage of sediment is reduced
8.25 (Section 8.7)	The barges to be fitted with 'green valves' in the overflow pipe to control the amount of air contained in the excess water in order to reduce turbidity. Overflow discharge to be managed using a computer-based management system to prevent excessive overflow discharge.
8.26 (Section 8.7)	Below keel discharge of tailwaters to be via an anti-turbidity control valve. Vessel to have on-board systems for determining the density of dredged material (or solid to water ratio).
8.27 (Section 8.7)	Turbidity minimising equipment will be serviced and inspected appropriately by the dredging contractor. Vessel log books will be maintained by the dredging contractor and are available for viewing by GPC.
8.28 (Section 8.7)	A dredging contractors' Ballast Water Management Plan will be prepared in accordance with the Australian Ballast Water Management Requirements (Version 6) (Commonwealth Government 2016). The management plan will include contingency measures that include, but are not limited to: ■ Immediate notification to DAF (Biosecurity Queensland), DAWR, DES and MSQ ■ Follow any directions or notices given by a regulator in relation to marine pests ■ Corrective actions (i.e. immediate investigation strategies, holding the balance of ballast on board, transferring the balance between tanks, examining ship to shore transfer options, etc.) ■ Consequential reporting/liaison requirements.
Stabilisation and maintenance activities in the reclamation area	
8.29 (Section 8.7)	No contaminants will be released from site to any waters, beds, or banks of any waters (including groundwater) unless authorised
8.30 (Section 8.7)	Progressive installation of stormwater management measures on the final Project reclamation surface as it is completed
8.31 (Section 8.7)	At the completion of filling of the reclamation area, the a large stormwater pond will be retained to manage stormwater quality runoff from the final surface
8.32 (Section 8.7)	Progressive capping and revegetation of the reclamation surface to manage stormwater quality
8.33 (Section 8.7)	No refuelling or maintenance of equipment will occur outside the construction compound, nor will equipment be parked at the work site for a significant time, reducing the potential for significant spills of oils and fuels to occur
8.34 (Section 8.7)	No waste, other than reclamation decant water, is to be released into the marine environment or adjacent vegetation communities

EIS commitment number (EIS section reference)	EIS commitment
8.35 (Section 8.7)	Spill kits for land and water based spills will be kept at the site and personnel trained in their use. Emergency response procedures will be implemented
8.36 (Section 8.7)	Best practice management will be implemented throughout the maintenance phase, by implementing the Project EMP, GPC maintenance procedures and guidelines, and complying with all relevant Commonwealth and State legislation and approval conditions.
Established duplicated shipping channels	
8.37 (Section 8.7)	Vessels will comply with the *Quarantine Act 1906* for management of introduced pests in ballast waters, managed by the AQIS
8.38 (Section 8.7)	Vessels will comply with the International Convention on the Control of Harmful Antifouling systems on Ships, managed by MSQ
8.39 (Section 8.7)	Waste management during operation will be implemented in accordance with the relevant legislative approval conditions and best practice management
8.40 (Section 8.7)	Loading and unloading of materials at facilities will be undertaken in accordance with individual operational licences and permits.
Maintenance dredging	
8.41 (Section 8.7)	GPC will obtain all required permits for maintenance dredging and will implement mitigation measures
8.42 (Section 8.7)	Maintenance dredging operations will occur in compliance with applicable Commonwealth and State legislative requirements, as well as the Port of Gladstone Maintenance Dredging EMP (#879363) and the Long Term Monitoring and Management Plan for Sea Disposal (#1071543) (LTMMP)
8.43 (Section 8.7)	A water quality monitoring program will be undertaken throughout maintenance dredging activities, to ensure that WQOs are achieved
8.44 (Section 8.7)	Preparation and implementation of a sediment SAP to determine suitability of maintenance dredged material for marine placement
8.45 (Section 8.7)	Any contaminated material detected in future testing will be assessed and investigated to determine suitability and management options under the NAGD (2009) and the sea dumping permit process.
Monitoring, reporting and corrective actions	
8.46 (Section 8.7)	Undertake water quality monitoring, reporting and implement corrective action in accordance with the Project Environmental Monitoring Procedure
8.47 (Section 8.7)	GPC will report monitoring results to DoEE and DES as per permit requirements
8.48 (Section 8.7)	Regular internal and external third party audits will be conducted for the duration of the Project works, to ensure that: ■ Mitigation measures are being implemented effectively ■ Relevant performance criteria is being achieved ■ Activities are compliant with regulatory and Project-specific requirements ■ Any non-conformances are recorded and appropriate corrective actions are implemented.
8.49 (Section 8.7)	All records and associated permits will be provided to the relevant authority upon request and/or at the completion of Project activities

EIS commitment number (EIS section reference)	EIS commitment
8.50 (Section 8.7)	Complaints and incidents will be monitored throughout the Project activities, and corrective actions will be determined by the incident or complaint investigation
8.51 (Section 8.7)	Maintenance and/or corrective actions will be scheduled as required for equipment issues
8.52 (Section 8.7)	Records/logs of dredging and dredged material placement activities will be maintained in accordance with relevant permit and legislative requirements
8.53 (Section 8.7)	Regular auditing will be undertaken to confirm that Project activities are carried out in accordance with the defined requirements set out in the Dredging EMP, Project Environmental Monitoring Procedure and the Project EMP.
8.54 (Section 8.7)	Regular visual monitoring of turbid plumes during rock placement as part of the WBE reclamation area bund wall construction
8.55 (Section 8.7)	Weekly reports (as appropriate) will be completed for the duration of the Project activities
8.56 (Section 8.7)	Pre-start inspections on construction equipment to identify potential leaks
8.57 (Section 8.7)	Emergency response procedure will be prepared prior to the commencement of construction as part of the environmental management plans and the GPC EMS
8.58 (Section 8.7)	A non-compliance report will be filled out if any non-conformances are found
8.59 (Section 8.7)	In the event of an environmental incident, effective emergency response measures will be quickly implemented to ensure environmental harm for the event is minimised and feedback is issued to all parties involved in the works.
9. Nature conservation	
Pest and weed management plan	
9.1 (Section 9.27)	A pre-construction baseline pest and weed survey will be undertaken to identify high risk species (location and abundance) within the Project direct impact areas. This survey will be used as a baseline to enable assessment against performance indicators during the construction phase. The survey will be conducted within the intertidal and terrestrial environments associated with the: ■ WB and WBE reclamation areas and construction compounds (terrestrial and intertidal areas) ■ BUF ■ Quarry and haul route. This survey will target both flora and fauna pest species.
9.2 (Section 9.27)	The PWMP will be updated using site specific detail obtained during the baseline pest and weed survey.
9.3 (Section 9.27)	Prior to construction high risk areas will be identified (i.e. areas containing prohibited or restricted matters as defined by the Biosecurity Act) within the Project direct impact areas. Vehicle wash/blow-down facilities and procedures will be established for these areas to reduce the risk of the transport and potential spread of weed species and/or their propagules.

EIS commitment number (EIS section reference)	EIS commitment
9.4 (Section 9.27)	The Dredging Contractor will prepare a Ballast Water Management Plan (BWMP) in accordance with the *Australian Ballast Water Management Requirements* (Version 7) (Commonwealth Government 2017) (or the most recent revision). This management plan will include contingency measures that include: ■ Information on instances where immediate notification to DAWR/DES/MSQ is required ■ Ballast water management measures ■ Corrective actions (i.e. immediate investigation strategies, holding the balance of ballast on board, transferring the balance between tanks, examining ship to shore transfer options, etc.) ■ Reporting/liaison requirements.
9.5 (Section 9.27)	All dredging plant will be required to conform with the BWMP and DAWR Guidelines to minimise the risk of the introduction of any introduced marine species.
9.6 (Section 9.27)	All vehicles and machinery will be visually inspected by an appropriately skilled person, prior to entering the Project impact areas.
9.7 (Section 9.27)	All vehicles entering areas known to contain pest or weed species (high risk areas) will be washed down prior to entering a low risk area (i.e. areas free of pest or weed species).
9.8 (Section 9.27)	Signs will be erected at entrance points, prompting the wash-down of all vehicles prior to entering low risk areas.
9.9 (Section 9.27)	All high-risk materials (e.g. imported soil) will be certified as 'free of weeds and pests' prior to acceptance into Project impact areas.
9.10 (Section 9.27)	Regular inspections will occur within the terrestrial Project impact areas to identify and record any sightings of pest fauna species. Appropriate mitigation measures will be developed and implemented for pest fauna species to avoid and/or minimise potential impacts on native fauna species and their habitats (e.g. migratory shorebirds and roosting/foraging habitat).
9.11 (Section 9.27)	Any sightings of any terrestrial pest fauna species will be maintained in a log and reported back to the Contractor's Environmental Manager
9.12 (Section 9.27)	Soil and fill material from high risk areas will not be transported to low risk areas.
9.13 (Section 9.27)	All declared prohibited or restricted plant matter (as defined by the Biosecurity Act) detected within Project impact areas will be controlled in accordance with the specific herbicide application procedure/s, outlined in the PWMP.
9.14 (Section 9.27)	Vehicle movement will be restricted to existing roads and temporary tracks, wherever practicable.
9.15 (Section 9.27)	Food scraps will be removed from the Project impact areas every day so as to limit the potential for pest fauna species to enter Project impact areas.
9.16 (Section 9.27)	The use of herbicides and pesticides within and adjacent to intertidal/marine areas and drainage lines will be avoided and/or minimised. Products that are specifically formulated for use in environmentally sensitive areas will be used in these locations where required.
9.17 (Section 9.27)	Major incidents resulting in a significant spread of weeds and/or pests will be reported to GPC, and the appropriate regulatory agency (e.g. DAWR, DES, MSQ)
9.18 (Section 9.27)	In the event that marine pests are introduced/spread as a result of Project activities, the BWMP contingency measures will be implemented in accordance with the Australian Ballast Water Management Requirements.

EIS commitment number (EIS section reference)	EIS commitment
Vegetation management plan	
9.19 (Section 9.27)	If terrestrial vegetation clearing is required within areas mapped as a 'high risk' area on the flora survey trigger map, a vegetation survey will be undertaken by a suitably qualified person in accordance with the *Flora Survey Guidelines – Protected Plants* guideline (version 2.0, 2016) (or the most recent revision). This survey is required to determine if there are protected plant species within the Project impact areas that have the potential to be impacted by Project activities. In the event that protected flora species are located, and are likely to be impacted as a result of Project activities, an Impact Management Plan (IMP) will be developed which will include species-specific mitigation measures. All relevant permits will be obtained prior to clearing in accordance with the *Flora Survey Guidelines – Protected Plants* guideline (version 2.0, 2016) (or the most recent revision).
9.20 (Section 9.27)	A pre-construction baseline mangrove and seagrass meadow survey will be undertaken in the Project indirect impact area (where there is the potential for impacts as a result of Project activities), in accordance with the DES *Monitoring and Sampling Manual 2018: Environment Protection (Water) Policy 2009, Version February 2018 – Biological assessment: Monitoring mangrove forest health* (or the most recent revision).
9.21 (Section 9.27)	A Bushfire Management Plan (BMP) will be developed and implemented and will include measures to minimise the risk of fire on areas of native vegetation.
9.22 (Section 9.27)	The BMP will identify measures to minimise potential ignition sources associated with Project activities, including all earth-moving equipment to be fitted with fire arrestors.
9.23 (Section 9.27)	The construction compound and other laydown areas will be located within existing cleared and/or disturbed areas that are considered to be of low ecological value, where practical.
9.24 (Section 9.27)	The design of the Project works will aim to reduce impacts on adjacent intertidal vegetation and marine plants (e.g. seagrass meadows and mangroves), where practical, and will reduce potential fragmentation impacts as a result of Project activities.
9.25 (Section 9.27)	All necessary permits and approvals will be obtained prior to undertaking relevant works. Any vegetation clearing or removal of marine plants will be carried out in accordance with all relevant approval conditions.
9.26 (Section 9.27)	The clearing or removal of terrestrial, intertidal or marine vegetation (where unavoidable) will be restricted to the minimum required to enable the safe construction and maintenance of the Project, including minimising disturbance to ecologically sensitive areas.
9.27 (Section 9.27)	The clearing of vegetation and grubbing works (if required) will employ techniques that leave the root ball intact and minimise the disturbance of soil/sediments, where practical (e.g. cut the tree at the base and leave the root structure *in situ*).
9.28 (Section 9.27)	Cleared vegetation will be stockpiled and mulched for use within the reclamation works area. Stockpiles will be placed in areas of low ecological value (i.e. existing cleared and/or disturbed areas), where practical.
9.29 (Section 9.27)	Parking of vehicles, stockpiling, or storage of plant/equipment will not be permitted within areas of native vegetation. Tree protection zones will be established where Project impact areas are within/adjacent to vegetated areas, as identified by a suitably qualified person (e.g. arborist, ecologist, environmental officer/manager).
9.30 (Section 9.27)	The condition of mangrove habitats will be monitored every 6 months within areas that have the potential to be impacted by Project activities, in accordance with the DES *Monitoring and Sampling Manual 2018: Environment Protection (water) Policy 2009, Version February 2018 – Biological assessment: Monitoring mangrove forest health* (or future versions). This will be undertaken for the duration of the Project activities, and for a 2 year period following the completion of Project activities.

EIS commitment number (EIS section reference)	EIS commitment
9.31 (Section 9.27)	The health and extent of seagrass meadows, benthic macroalgae and the condition of coral reefs will be monitored within areas potentially impacted by Project activities as detailed within the Environmental Monitoring Procedure (Appendix Q3). This will include surveys during dredging and post dredging to assess the extent of these communities at multiple sites located within the low and moderate impact zones, and the zone of influence established for water quality parameters (outlined in the Environmental Monitoring Procedure).
9.32 (Section 9.27)	Dredging and dredged material placement works will be restricted to the extent necessary to enable the safe construction and maintenance of the Project, including minimising the disturbance to ecologically sensitive areas (i.e. adjacent habitats and seagrass communities).
9.33 (Section 9.27)	Turbidity and Benthic Photosynthetically Active Radiation (BPAR) will be monitored during dredging activities, and adaptive management measures will be implemented where there is an exceedance of trigger values outlined in the Environmental Monitoring Procedure for sensitive ecological values (e.g. seagrasses and coral reefs).
9.34 (Section 9.27)	The hydrodynamic model for the reclamation area will be validated following completion of construction to determine actual sedimentation and erosion impacts. Management measures will be revised, if required, to reduce the potential for impacts on sensitive ecological receptors (e.g. seagrass meadows, water quality).
Fauna management plan	
9.35 (Section 9.27)	The detailed design of the Project works will take into account fauna impacts, with residual adverse impacts offset through the provision of suitable offsets in accordance with legislative requirements.
9.36 (Section 9.27)	A pre-construction fauna habitat survey will be conducted by a suitably qualified and experienced person, to detect and record details of animal breeding places (as defined under Schedule 5, Section (1) of the NC Reg) within the Project direct impact area and surrounds, and obtain additional site-specific information to supplement existing fauna data. The survey extent will include the Project direct impact areas associated with the WB and WBE reclamation areas, BUF and construction compounds, including a 100m buffer (note: where additional impact areas are required, this mitigation measure will apply). Where required, a Species Management Plan (SMP) will be developed in accordance with the requirements of the *Nature Conservation (Wildlife Management) Regulation 2006*, and approvals to operate under the SMP will be obtained as required, and in accordance with Section 88 of the NC Act, and pursuant to Section 332 of the NC Reg, to authorise any unavoidable interference with animal breeding places (as defined under the NC Reg). Where breeding habitats, such as hollow-bearing trees or nests, are located within the Project impact areas, or where they have the potential to be impacted, measures to protect or appropriately manage these habitats will be developed in accordance with the *Nature Conservation (Wildlife Management) Regulation 2006.* These measures will be included in the Fauna Management Plan (FMP) prior to construction or impacting activities being undertaken, and will address the following: ■ Potential impacts to native terrestrial and intertidal animal breeding places, resulting from Project activities ■ Site-specific and practical management actions to avoid or minimise both the potential immediate and long-term impact/s of removing an animal breeding place ■ Monitoring and reporting requirements that demonstrate how management actions will be effectively implemented and will produce the intended results.
9.37 (Section 9.27)	The FMP will be finalised prior to construction using site-specific detail obtained during pre-construction fauna habitat surveys. The FMP will incorporate the mitigation measures to avoid or minimise potential impacts to native terrestrial and intertidal fauna, within areas that have the potential to be impacted by Project activities.

EIS commitment number (EIS section reference)	EIS commitment
9.38 (Section 9.27)	The survey for and management of wildlife will be undertaken by suitably qualified personnel with the appropriate permits and licences (e.g. fauna spotter catchers to have appropriated damage mitigation permits)
9.39 (Section 9.27)	Wildlife load reduction measures will be implemented and conducted by a suitably qualified ecologist
9.40 (Section 9.27)	Where practicable, the construction of the WBE reclamation area bund wall that is nearest to the coastline will be scheduled to occur from March to September (i.e. outside of the critical migratory bird visitation periods for the majority of species visiting Port Curtis) (as presented in Appendix 3 (Timing of Migration) of the *Gladstone Ports Corporation Report for Migratory Shorebird Monitoring Port Curtis and the Curtis Coast Annual Summer Survey 2016*). Migratory birds are still likely to be present in the area outside of the March to September period, therefore measures relating to migratory shorebirds and their habitat will be implemented as required during the construction period (i.e. not restricted to these months).
9.41 (Section 9.27)	During pre-construction activities, all personnel operating vehicles will be made aware of the potential to encounter native fauna, including conservation significant species, and be trained in the implementation of the relevant mitigation measures including all requirements for reporting injured/trapped fauna.
9.42 (Section 9.27)	Appropriate signage will be installed, to promote driver awareness and provide safety for fauna crossing or inhabiting the area. Reduced speed zones will be established within proximity to sensitive areas, to be determined prior to construction by a suitably qualified person (e.g. ecologist, fauna spotter catcher).
	If required, tree clearing activities will be undertaken in the presence of a suitably qualified and experienced fauna spotter catcher, in accordance with the FMP and other approvals and legislative requirements.
9.43 (Section 9.27)	Any works occurring within sensitive habitats (e.g. shorebird habitat) will be conducted in the presence of a fauna spotter catcher.
9.44 (Section 9.27)	The fauna spotter catcher will have the authority to initiate a 'stop-work' order within the buffer zone of an active breeding place (i.e. 50m for all raptor, owl, and conservation significant species; 30m for all other species). In this event, the spotter catcher will determine the appropriate management of the breeding place in accordance with the management measures included in the FMP (as developed following the pre-construction survey) and in accordance with all relevant permits and approvals.
9.45 (Section 9.27)	The fauna spotter catcher will relocate any displaced fauna to a suitable recipient site, in the event that the animal is not injured. All injured animals (native or introduced) will be taken to receive immediate veterinary attention.
9.46 (Section 9.27)	If an animal is injured during construction activities, works in the immediate area of the animal will cease immediately and will not recommence until rescue actions have been taken. A review of construction activities will be undertaken following the event, to minimise the risk of the event reoccurring. The results of the review will be communicated to the relevant personnel, including the requirement to adapt alternative construction methods and/or additional mitigation measures.
9.47 (Section 9.27)	Speed limits will be enforced for all Project activities to prevent injuries to native fauna.
9.48 (Section 9.27)	Where night lighting is required (i.e. cannot be avoided), the lights will be directed to avoid light spill into adjacent marine, intertidal and terrestrial areas, and appropriate bulbs will be selected and used to reduce potential impacts on marine fauna (e.g. to avoid impacts on marine turtle orientation).
9.49 (Section 9.27)	If fauna exclusion fencing is determined to be required as a result of the pre-construction fauna surveys, a detailed summary of exclusion fencing requirements will be prepared and included in the FMP.

<table>
<tr><th>EIS commitment number (EIS section reference)</th><th>EIS commitment</th></tr>
<tr><td>9.50 (Section 9.27)</td><td>A marine species emergency response/notification plan will be developed to allow for the rapid and effective handling (e.g. capture and release) of marine fauna in the event that an incident occurs within Project impact areas.</td></tr>
<tr><td>9.51 (Section 9.27)</td><td>Where practicable, all vessels will be fitted with propeller guards to reduce potential impacts on marine fauna as a result of propeller strike.</td></tr>
<tr><td>9.52 (Section 9.27)</td><td>Dredger heads will be fitted with fauna exclusion devices, including turtle deflectors. This equipment will be appropriately serviced and inspected prior to commencement of dredging activities to ensure it is in good working order.</td></tr>
<tr><td>9.53 (Section 9.27)</td><td>All vessel operators will be made aware of the potential for native fauna species, including conservation significant species, to occur within the Project impact areas, prior to construction</td></tr>
<tr><td>9.54 (Section 9.27)</td><td>During construction of the WBE reclamation area and BUF, migratory shorebirds will be monitored by a suitably qualified person (e.g. fauna spotter catcher, ecologist) to determine if adaptive management of Project activities is required. This will include monitoring impacts in response to a range of construction-related activities, including potential noise and dust impacts; vehicle movements; and the potential introduction and/or spread of pest species (e.g. foxes, wild dogs). Works will cease and mitigation measures developed where the suitably qualified person identifies that the Project activities are resulting in frequent alarm or flight responses, or avoidance of the area.
The results of the monitoring will be reported and will include the identification of adaptive management measures to be implemented to avoid or reduce impacts on these species.</td></tr>
<tr><td>9.55 (Section 9.27)</td><td>Noise spot checks will be conducted at nearby shorebird roosts during construction (i.e. Friend Point shorebird roost) and compared to the following guidelines for migratory shorebirds. Works will cease and mitigation measures developed as appropriate where noise spot checks determine that ‘moderate impacts on habitat use’, or ‘avoidance of area’ disturbance has or is likely to occur.
<table>
<tr><th>Disturbance effect</th><th>Steady or continuous noise sources LA_{eq} (15min)(dBA)</th><th>Episodic (single event or short-term) noise sources LA_{max} (dBA)</th><th>Typical bird activities potentially impacted</th></tr>
<tr><td>Occasional (Alert) – minor impacts on habitat use for most species</td><td>50 to 65</td><td>45 to 60</td><td>Nesting</td></tr>
<tr><td>Frequent (Alarm or Flight) – moderate impacts on habitat use</td><td>65 to 85</td><td>60 to 80</td><td>Nesting
Roosting</td></tr>
<tr><td>Avoidance of area – by most of the population of some species</td><td>≥85</td><td>≥80</td><td>Nesting
Roosting
Foraging</td></tr>
</table>
Note:

Masking impacts, particularly on smaller songbirds, may occur at noise levels of approximately the alert threshold right up until the point of avoidance
LA_{max} limits have been specifically set below the LA_{eq} limits in recognition of considerations related to startle response.
</td></tr>
<tr><td>9.56 (Section 9.27)</td><td>Appropriate signage will be erected in prominent positions to promote awareness of marine fauna present within the Project impact areas.</td></tr>
</table>

EIS commitment number (EIS section reference)	EIS commitment
9.57 (Section 9.27)	A suitably trained fauna spotter crew member will be present on all moving vessels larger than 7m in length, at all times and will conduct a pre-start search for marine fauna prior to the commencement of dredging, and will to continue to spot for marine fauna throughout dredging activities (i.e. continual observations during dredging). All fauna observations will be recorded and reported, as per the relevant approval requirements.
9.58 (Section 9.27)	Immediately prior to the commencement of dredging activities, a search for marine megafauna will be conducted by a suitably trained crew member, in accordance with the relevant management plans and permits, approvals, and legislative requirements.
9.59 (Section 9.27)	Dredging works will be stopped in the event that the marine fauna spotter (or operator) observes a marine turtle or marine mammal (e.g. dolphin, dugong or whale) within 50m of the operation. Dredging will not recommence until the animal(s) have moved beyond 50m or until 15 minutes has passed and the animal(s) have not been observed within 50m of the operations during that time. The vessel may move to another area and recommence work provided that the 50m separation distance is maintained.
9.60 (Section 9.27)	Vessel speed limits will be enforced within the Project impact areas to reduce the potential for injury to marine fauna. Go slow zones will be established in shallow areas, less than 5m in depth.
9.61 (Section 9.27)	A bund wall closure plan will be prepared to manage potential impacts on marine and intertidal fauna species. This plan will include the following measures: ■ When construction of the WBE reclamation area and BUF reaches the stage where the bund/sheet piling wall is to be closed, a suitably trained marine fauna spotter will be present to minimise the risk of marine fauna being stranded within the WBE reclamation area and BUF ■ If there are any instances of overflow into the reclamation area or BUF once they have been closed, the area within the reclamation area or BUF bund will be immediately inspected for any stranded fauna ■ Fish capture/salvage techniques will be implemented, as provided in the Fish Salvage Guidelines (DPIF 2004), if required ■ All personnel involved in the capture and salvage of fauna will be appropriately inducted and trained Fauna exclusion measures will be installed on the seaward facing side of all discharge points to prevent fauna entering into the reclamation area via the discharge points. Exclusion measures will allow fauna within the reclamation area to leave and re-enter the marine environment (e.g. one-way gates).
9.62 (Section 9.27)	The bund wall/sheet piling wall closure plan will contain details on the following: ■ Qualifications and training of personnel undertaking the capture and salvage and the methods to be used ■ Details of the relevant permits under which the bund wall closure activities will be undertaken ■ Overview of the bund/sheet piling wall closure schedule, including pre-closure meetings and checks ■ Monitoring and reporting requirements.
9.63 (Section 9.27)	Hazardous substances with the potential to impact fauna and associated habitat will be stored within suitably contained and bunded areas within construction compounds, and located an appropriate distance from waterbodies and/or sensitive habitats.

<table>
<tr><th>EIS commitment number (EIS section reference)</th><th>EIS commitment</th></tr>
<tr><td>9.64 (Section 9.27)</td><td>An exclusion/safety zone will be created around the perimeter of the navigational aid impact piling. During the works, a suitably trained marine fauna spotter will be present to ensure that navigational aid impact piling will not be carried out while:
Dugongs, turtles or other protected marine species are within 150m of piling activities
Migratory birds are within 25m of piling activities
Activities will be placed on hold for the period of time it takes the animal to leave the safety zone of its own accord.
The following fauna safety shut-down zones will also be implemented for continuous impact piling durations using the fauna spotter:<table><tr><th colspan="2">Noise exposure threshold based on cumulative SEL (within a 24-hour period)</th><th>Observation zone</th><th>Shut-down zone</th></tr><tr><td>Duration with continuous piling @ 100 strikes / min</td><td>Cumulative SEL
< 198dB re 1µPa^2·S</td><td></td><td></td></tr><tr><td>≤ 1 min</td><td>≤ 50m</td><td>1.0km</td><td>50m</td></tr><tr><td>10 min</td><td>310m</td><td>1.0km</td><td>310m</td></tr><tr><td>60 min</td><td>1.4km</td><td>2.0km</td><td>1.4km</td></tr></table></td></tr>
<tr><td>9.65 (Section 9.27)</td><td>Impact piling activities will be avoided during the following times:
When marine mammals are likely/observed to be breeding, calving, feeding or resting in nearby biologically important habitats (i.e. times may vary depending on species)
Humpback whale migration season from June to September (ie June to August for northward migration to breeding grounds, and around September for the southward migration)
During marine turtle peak nesting activity period from November to December.</td></tr>
<tr><td>9.66 (Section 9.27)</td><td>Standard operating procedures will be required to be undertaken by contractors during impact piling activities, and will include pre-start, soft start, normal operation, stand-by operation, and shut-down procedures, as follows:
Pre-start monitoring – the presence of marine turtles and marine mammals will be visually monitored by a suitably trained crew member for at least 30 minutes before piling commences using a soft start procedure
Soft start – if marine turtles and marine mammals have not been observed inside the shut-down zone during the pre-start observations, soft start will commence with piling impact energy gradually increased over a 10-minute time period. A soft start will also be used after long breaks of more than 30 minutes in piling activity.
Normal piling – if marine turtles and marine mammals have not been observed inside the shut-down or observation zones during the soft start, piling at full impact energy will commence. Visual observations will continue throughout piling activities
Stand-by – if a marine turtle or marine mammal is sighted within the observation zone during the soft start or normal operation piling, the operator of the piling rig will be placed on stand-by to shut down the piling rig, while visual monitoring of the animal continues.
Shut-down – if a marine turtle or marine mammal is sighted within or are about to enter the shut-down zone, piling activity will be stopped immediately. If the animal is observed to move outside the zone again, or 30 minutes have elapsed with no further sightings, piling activities will recommence with the soft start procedure. If a marine turtle or marine mammal is detected in the shut-down zone during a period of poor visibility, operations will stop until visibility improves.</td></tr>
</table>

EIS commitment number (EIS section reference)	EIS commitment
9.67 (Section 9.27)	■ Where noise-related incidents occur while implementing standard operating procedures, validation of the effectiveness of the following noise mitigation measures will be undertaken (via site acoustic testing): – Lower impact piling duration/piling strike number per day – Use of additional impact piling noise attenuation measures: ■ Air bubble curtains. Air bubble curtains are designed to infuse the water column surrounding the pile with air bubbles, generating a bubble screen that attenuates the sound propagation from the piling. For the mid-sized steel pile proposed for the Project (with a dimension greater than 24 but less than 48 inches), an air bubble curtain is expected to provide about 10 dB of noise reduction. ■ Isolation casings. Isolation casings are hollow casing slightly larger in diameter than the pile to be driven. The casing is inserted into the water column and bottom substrate, and then dewatered so that the work area is isolated from the surrounding water column in order to attenuate the sound propagation. Dewatered isolation casings are expected to provide attenuation that is at least as great as the attenuation provided by air bubble curtains. ■ Cushion blocks. Cushion blocks consist of blocks of material atop a pile during piling to minimise the noise generated during impact hammering. Materials typically used for cushion blocks include wood, nylon and micarta blocks. The noise reduction is expected to be from a few dB to over 20 dB. This measure can be used in conjunction with air bubble curtains or isolated casings as described above.
10. Water resources	
10.1 (Section 10.6.1)	Installation of piezometers on the perimeter of the WBE reclamation area once earthworks are completed. The piezometers will be installed in the dredged material and not the bund wall to ensure the accuracy of results.
10.2 (Section 10.6.1)	Development of a WB and WBE reclamation areas groundwater monitoring program to be implemented once dredging and earthworks have been completed and the WB and WBE reclamation areas are stable. Monitoring to include sites within the coastal strip of land adjacent to the WBE reclamation area to be installed prior to construction commencing. Groundwater monitoring piezometer installation will not be undertaken during the construction of the WBE reclamation area as piezometers are likely to be broken/demolished prior to finalisation of earthworks.
10.3 (Section 10.6.2)	As part of the stabilisation and maintenance phases of the WB and WBE reclamation areas (post dredging) an ongoing groundwater monitoring program (i.e. groundwater levels and water quality, specifically pH) will be implemented until the risk of PASS contamination is minimised. If potential effects are observed, as part of the operational groundwater monitoring, corrective actions would include: ■ Further investigation to qualify, quantity and delineate impacts ■ Identify and implement appropriate management and/or remediation measures.
11. Climate and climate change assessment	
11.1 (Section 11.7)	Detailed design of the BUF and WBE reclamation area to consider potential changed surface water volumes in extreme rainfall events
11.2 (Section 11.7)	Detailed design to consider the effects of increasing temperature on material selection for the BUF and WBE reclamation area bund walls
11.3 (Section 11.7)	Detailed design for the BUF and WBE reclamation area to include a ground stability assessment considering potential changes to temperature and rainfall profiles
11.4 (Section 11.7)	Site management plan will be prepared for the BUF and WBE reclamation area for the ongoing monitoring and management of ground stability

EIS commitment number (EIS section reference)	EIS commitment
11.5 (Section 11.7)	Detailed design for the BUF and WBE reclamation area to consider extreme events. A detailed analysis of storm surge and climate change allowances will be undertaken during detailed design of the BUF and reclamation area bund walls. The EIS preliminary design for the BUF and bund walls has allowed for a combined storm tide and sea level change up to +7m LAT. This is a 0.55m allowance above the predicted 500 year ARI storm tide, including a climate change estimate of 6.45m LAT.
11.6 (Section 11.7)	Prepare and implement a cyclone management plan during Project activities
11.7 (Section 11.7)	Implement the findings and recommendations of the *Independent Review of the Bund Wall at the Port of Gladstone* (April 2014) (refer Appendix D of the EIS).
12. Air quality and greenhouse gas (GHG)	
12.1 (Section 12.6.1)	Watering of haul roads or routes used for the haulage of material
12.2 (Section 12.6.1)	Watering of exposed areas to reduce wind-blown dust
12.3 (Section 12.6.1)	Watering to ensure material being dozed or graded is damp or applying suppressants to further reduce emissions from material haulage over completed sections of bund wall or other transport routes.
12.4 (Section 12.6.1)	Exhaust emissions from generators will be released at a point that is 2.5 times higher than buildings or structures within 10 stack heights of the exhausts to ensure that the exhaust will not be wake affected and to avoid localised elevated pollutant levels.
12.5 (Section 12.6.1)	During selection of dredging vessels, the total emissions and characteristics will be reviewed against the assumptions made in the air quality assessment to ensure consistency.
12.6 (Section 12.6.2.1)	Reducing fuel consumption and the generation of emissions during the construction of the bund wall by implementing the following measures: ■ Selection of fuel efficient machinery and vehicles, where possible, matched to the delivery requirements of quarry materials to the reclamation site ■ Appropriate equipment maintenance ■ Optimisation of transport of materials through load optimisation and delivery scheduling.
12.7. (Section 12.6.2.2)	Management of dredging operations will include the development of key performance indicators for fuel usage, delegation of responsibilities for monitoring, measurement and reporting
12.8 (Section 12.6.2.2)	Fuel efficiency for dredging operations can be achieved by maximising payload while minimising fuel consumption. Moving non-payload weight can unnecessarily increase fuel consumption. Measures to maximise payload include (De Cuyper et al. 2015): ■ Match vessel capacity to application ■ Minimise water and sediment trapped in the barges ■ Minimise non-payload weight, including spare parts and bunker fuel volumes ■ Minimise idle time.
12.9 (Section 12.6.2.2)	Although the GHG emissions associated with the dredging vessels journey to and from the area to be dredged and the WBE reclamation area has not been assessed, a singular campaign could reduce these emissions significantly compared to a staged approach.

EIS commitment number (EIS section reference)	EIS commitment
12.10 (Section 12.6.2.3)	Ongoing minimisation of diesel consumption during the earthworks on the reclamation site through equipment selection, maintenance and operational procedures.
12.11 (Section 12.6.2.4)	Ongoing consideration and evaluation of the potential to supplement fuel volumes with bio-diesel. This is to be undertaken by GPC during the detailed design phase of the Project.
12.12 (Section 12.6.2.4)	Reduction of heavy fuel consumption in dredging vessels by connecting them to mains power while docked. This option will be utilised where available and practical.
12.11 (Section 12.6.2.5)	Reduction of Scope 3 GHG emissions through reducing hoteling times at the various Port berths and the offshore anchorages, in particular for Capesize vessels.
12.12 (Section 12.6.3)	Daily odour surveys inspections of the downwind boundary of the WBE reclamation area during placement of dredged material will be undertaken to ensure there is no discernible impact from odour.
12.13 (Appendix Q2)	Wheel wash stations and/or vibration grids will be used at both ends of haul route from the quarry to the WBE reclamation area to reduce dust/mud deposition on public roads.
12.14 (Appendix Q2)	All marine plant and equipment will be maintained to minimise the discharge of noxious fumes and pollutants.
12.15 (Appendix Q2)	Vessels will be registered and in survey as required by Australian law and to the International Maritime Organisation (IMO) guidelines.
12.16 (Appendix Q2)	Key personnel will be provided mandatory training in the potential Project air quality impacts, sensitive receptors and mitigation measures to be implemented.
13. Noise and vibration	
Navigational aid installation	
13.1 (Section 13.7.1.2)	When the impact piling rig is used within 1km of nearby sensitive receptors on Facing Island and Boyne Island, the following measures will be implemented: ■ Undertake impact piling trials to determine the minimum required drop height to install the piles as small drop heights can reduce/control noise ■ Installation of piling 'cushions' at the point of impact to reduce the energy (sound emission) during each impact event.
Night-time channel duplication dredging with the TSHD and pushbusters	
13.2 (Section 13.7.1.2)	Include noise attenuation measures for the TSHD pumps, power generation plant and motors that would be on-deck sources of noise. Such measures could include: ■ Installing plant with the lowest available noise emission ■ Utilise on-deck structures to screen noise emissions from neighbouring plant ■ Install plant with acoustic enclosures, acoustic exhaust mufflers, acoustic louvers to limit noise emission levels
13.3 (Section 13.7.1.2)	Where practical, plan and manage the dredging program to utilise the less sensitive daytime and evening periods when dredging adjacent to residences on Facing Island. This will limit the requirement to operate the TSHD during the night-time at the closest distance to residences
13.4 (Section 13.7.1.2)	Where practical, pushbusters will not be run at full speed when passing by, or within 2.4km of, noise sensitive receptors on Facing Island

EIS commitment number (EIS section reference)	EIS commitment
General noise management for Project	
13.5 (Section 13.7.1.2)	General noise management controls are to be adopted and adhered to for the duration of the construction phase, particularly for all works outside the standard day time hours of construction (6.30am to 6.30pm Monday to Saturday). These include: ■ Brief the Project work team to raise awareness of migratory shorebirds and the importance of minimising noise emissions ■ Use mobile plant with efficient acoustic mufflers on the exhausts ■ Where practical, adjust reversing alarms on plant to limit the acoustic range to the immediate operational area ■ Selection of the quietest plant and equipment that can economically undertake the work ■ Regular maintenance of equipment to ensure that it remains in good working order ■ Where practical, avoid the coincidence of plant and equipment working simultaneously close together near sensitive receivers ■ Mobile plant such as excavators, front end loader and other diesel-powered equipment will be fitted with residential class mufflers ■ Where work is proposed within at least 1km of residences, the community will be notified at least 2 weeks prior to the commencement of start up. Notifications will describe the potential noise and vibration levels and the proposed management measures to control environmental impacts. ■ Broadband reversing alarms will be used instead of tonal reversing alarms where sensitive receptors are within 1km of proposed construction works. This will be a requirement when outside standard working hours and included as a contractual requirement for contractors. ■ Equipment which is used intermittently will be shut down when not in use and all engine covers will be kept closed while equipment is operating ■ During site inductions and toolbox talks, all site workers (including subcontractors and temporary workforce) will be made aware of the hours of construction and how to apply practical, feasible and reasonable measures to minimise noise and vibration when undertaking construction activities ■ The site manager (as appropriate) will provide a community liaison phone number and permanent site contact so that noise and/or vibration-related complaints, if any, can be received and addressed in a timely manner. Consultation and cooperation between the site(s) and neighbours to the site(s) will assist in limiting uncertainty, misconceptions and adverse reactions to noise and vibration.
13.6 (Section 13.7.1.3)	All noise generated during the Project will be monitored, documented and managed in accordance with the Noise and Vibration Management Plan (NVMP) that has been prepared as part of the Project EMP. The NVMP requires the following actions: ■ Monitor construction noise levels at the commencement of the construction phase to verify the outcomes of the noise assessment and confirm the noise from the Project activities will not cause unacceptable impacts at sensitive receptors ■ Implement a rolling spot check regime of noise intensive plants and equipment ■ Undertaken all monitoring in accordance with relevant Australian Standards and regulatory guidelines for the measurement of environmental noise ■ Conduct supplementary noise and/or vibration monitoring, as warranted, to identify issues of concern in response to any noise complaints.

<table>
<tr><th>EIS commitment number (EIS section reference)</th><th>EIS commitment</th></tr>
<tr><td colspan="2">Underwater noise mitigation</td></tr>
<tr><td>13.7 (Section 13.7.2.2)</td><td>All proposed Project safety zones will be implemented to mitigate impact pilling.
Proposed safety zones for continuous impact piling durations
<table>
<tr><th colspan="2">Noise exposure threshold based on cumulative SEL (within a 24 hour period)</th><th>Observation zone</th><th>Shut-down zone</th></tr>
<tr><th>Duration with continuous piling @ 100 strikes/min</th><th>Cumulative SEL (< 198dB re 1µPa²·S)</th><th></th><th></th></tr>
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</table></td></tr>
<tr><td>13.8 (Section 13.7.2.2)</td><td>Implementation of the following management measures to reduce impact pilling noise and vibration:
Contract documentation – include these requirements for impact piling noise management and mitigation measures in the contract documentation
Timing and duration – avoid conducting impact piling during times when marine mammals are likely to be breeding, calving, feeding or resting in biologically important habitats nearby. Where practical, avoid piling during whale migration season.
Trained crew – ensure a suitably trained crew member is available during piling to conduct the recommended standard operational procedures to manage noise impacts
Standard operational procedures – standard operating procedures to be undertaken by contractors during piling activities include pre-start, soft start, normal operation, stand-by operation, and shut-down procedures, including:
Pre-start monitoring – the presence of marine turtles and marine mammals will be visually monitored by a suitably trained crew member for at least 30 minutes before piling commences using a soft start procedure
Soft start – if marine turtles and marine mammals have not been observed inside the shut-down zone during the pre-start observations, soft start may commence with piling impact energy gradually increased over a 10 minute time period. A soft start will also be used after long breaks of more than 30 minutes in piling activity
Normal piling – if marine turtles and marine mammals have not been observed inside the shut-down or observation zones during the soft start, piling at full impact energy may commence. Visual observations will continue throughout the piling activities
Stand-by – if marine turtles or marine mammals are sighted within the observation zone during the soft start or normal operation piling, the operator of the piling rig will be placed on stand-by to shut down the piling rig, while visual monitoring of the animal continues
Shut-down – if marine turtle or marine mammals are sighted within or are about to enter the shut-down zone, piling activity should be stopped immediately. If the animal is observed to move outside the zone again, or 30 minutes have elapsed with no further sightings, piling activities will recommence following the soft start procedure. If a marine turtle or marine mammal is detected in the shut-down zone during a period of poor visibility, operations will stop until visibility improves.</td></tr>
</table>

EIS commitment number (EIS section reference)	EIS commitment
13.9 (Section 13.7.2.2)	Compliance and sighting report – the contractor will maintain a record of procedures employed during piling, including information on any marine mammals or marine turtles sighted, and their reaction to the piling activity. The report will include ■ Location, date, start and completion time of piling ■ Information on the piling rig (hammer weight and drop height), pile size, number of piles, number of impacts per pile ■ Details of the trained crew members conducting the visual observations ■ Times when observations were hampered by poor visibility or high winds, times when start-up delays or shut-down procedures occurred, and the time and distance of any marine mammal or marine turtle sightings.
Additional mitigation measures for fish, dugong and marine turtles	
13.10 (Section 13.7.2.2)	Use of piling noise attenuation measures. Various attenuation measures have been developed to attenuate underwater piling noise to minimise exposure of marine fauna species during piling activities (ICF Jones & Stokes and Illingworth & Rodkin 2009). These measures include but not limited to: ■ Air bubble curtains. Air bubble curtains are designed to infuse the water column surrounding the pile with air bubbles, generating a bubble screen that attenuate the sound propagation from the pile. For a mid-sized steel pile as used in this Project (with a dimension greater than 24 inches but less than 48 inches), the previous experiment data indicates that an air bubble curtain will provide about 10 dB of noise reduction (ICF Jones & Stokes and Illingworth & Rodkin 2009) ■ Isolation casings. Isolation casings are hollow casing slightly larger in diameter than the pile to be driven. The casing is inserted into the water column and bottom substrate, and then dewatered so that the work area could be isolated from the surrounding water column in order to attenuate the sound propagation. Dewatered isolation casings generally can be expected to provide attenuation that is at least as great as the attenuation provided by air bubble curtains. ■ Cushion blocks. Cushion blocks consist of blocks of material atop a pile during piling to minimise the noise generated during impact hammering. Materials typically used for cushion blocks include wood, nylon and micarta blocks. The resulted noise reduction could be from a few dB to over 20 dB. This measure can be used in conjunction with air bubble curtains or isolated casings as above.
14. Waste	
14.1 (Section 14.6.1)	Waste produced by dredging and other vessels will be managed via contractual arrangements with GPC, and will meet requirements of the GPC EMS as well as the relevant waste management legislation and guidelines.
14.2 (Section 14.6.1)	Any waste fuel, oils and lubricants (including oily bilge water) generated by vessels during dredging works will be collected and managed by Nationwide Oil Pty Ltd as per DTMR's Port Procedures.
14.3 (Section 14.6.2)	Green waste generated during construction and operational management of the WB and WBE reclamation areas (i.e. vegetation cleared for construction and operational management, including grass clippings and other green waste) will be used for landscaping and site stabilisation within the WB and WBE reclamation areas.
14.4 (Section 14.6.3)	The solid waste generated from the reclamation construction site office will be managed by GPC and collected by a waste contractor and disposed of in accordance with the applicable legislation and policies.
14.5 (Section 14.6.3)	All waste areas will be kept tidy and all municipal waste will be placed in the appropriate receptacle. Sealed bins will be used to prevent wind, animals and rain from spreading litter.

EIS commitment number (EIS section reference)	EIS commitment
14.6 (Section 14.6.3)	Solid waste will be temporarily stored onsite, in accordance with the relevant legislation and guidelines, and regularly collected by a licenced waste disposal contractor and, where recycling is not feasible, transferred to a licenced waste facility within the GRC area (e.g. Benaraby Landfill).
14.7 (Section 14.6.4)	Waste water generated by the dredger activities will be stored on the dredger, transferred to Auckland Point Wharf area for collection and then transported to GRC sewage treatment plant. Dredgers with on-board tertiary waste water treatment facilities will treat generated waste water within these facilities.
14.8 (Section 14.6.4)	All sewage and greywater, generated as a result of the operation of the reclamation area construction compound and site office, will be temporarily stored onsite in accordance with the relevant waste management legislation and guidelines, and removed and transported to the GRC sewage treatment plant.
14.9 (Section 14.6.4)	In the event of an oil or fuel spill into marine and/or terrestrial environments, vessels will adhere to the requirements of the spill-clean procedure included in the DTMR *Guide for the prevention of ship-sourced pollution and for the safe transfer of bunkers in Queensland waters, 2016.* An Environmental Incident Report and Corrective Action Report will be completed within 24 hours of the incident occurring as per the requirements set out in the Project EMP.
14.10 (Section 14.6.5)	All vessels arriving at the Port of Gladstone are required to follow the DTMR's *Port Procedures and Information for Shipping, Port of Gladstone, 2017,* which details quarantine requirements.
14.11 (Section 14.6.5)	Upon arrival within the Port of Gladstone, all wastes, including quarantine waste, from the dredging vessels will be assembled for collection and disposal. Quarantine waste will be kept in sealed plastic bags on board until collection by a licenced contractor (DTMR 2018). Quarantined waste will be sterilised prior to disposal at a licenced facility.
14.12 (Section 14.6.6)	Where feasible the waste management hierarchy, as per the *Waste Reduction and Recycling Act 2011* will be implemented during the Project.
14.13 (Section 14.6.6)	**Hydrocarbons, oils and other lubricants (including oily bilge)** ■ Removal of solid and liquid waste to a licenced facility ■ Waste bulk oils will be stored on dredgers and directly transferred to existing Port wharves or via work boats ■ No truck and vehicle maintenance permitted at the reclamation area. All maintenance to occur offsite at either the quarry, GPC or contractor facilities ■ Powered Mobile Equipment (PME) will be suitable and rated for the task and kept in good working order ■ A PME preventative maintenance regime will be implemented ■ Temporary storage of hydrocarbons will occur in bunded areas that are appropriately sized for the application and capacity maintained (i.e. kept free of rain water) ■ Wash bilges with biodegradable degreasers or detergents and dispose of cleaning residue ashore ■ Use absorbents to mop up excess oil or fuel ■ Undertake checks and preventative maintenance of plant and equipment to minimise leaks and spills ■ Spill response procedures implemented and staff are suitably trained ■ Spill equipment (including hydrocarbon absorbent booms) is available and staff are familiar with its use ■ Regular maintenance of work areas, storage areas, transfer equipment and spill equipment

EIS commitment number (EIS section reference)	EIS commitment
	■ Call emergency services to assist with hazardous material spills ■ Appropriate handling of absorbent material (including absorbent booms) where these have been used to clean up spills
14.14 (Section 14.6.6)	**Hazardous and potentially hazardous waste** ■ Maintain inventory and safety data sheets for hazardous substances ■ Tracking records to be kept when regulated waste is removed from the dredger or a GPC wharf facility. All regulated waste transported by licenced contractors and disposed at a licenced place. ■ Bring only the minimum quantity of substance required into the work areas ■ Store full and empty drums and/or containers in bunded areas ■ Collect empty drums for re-use or recycling ■ Waste not disposed of by burning ■ Hazardous substances handled and stored in a manner that prevents environmental harm ■ Any spills to be cleaned up as soon as practicable ■ Call emergency services to assist with hazardous material spills ■ Complaints or incidents to be reported to GPC.
14.15 (Section 14.6.6)	**Sewage/grey water** ■ Waste water from dredger and ablution facilities to be collected then transported to GRC sewage treatment plant ■ With the help of a licenced contractor determine the number of ablution facilities required at the site offices for the duration of the Project ■ Dredgers with tertiary treatment facilities will treat generated waste water on board.
14.16 (Section 14.6.6)	**Municipal and office waste (food waste, plastics and paper)** ■ Provide facilities for the appropriate separation and storage of waste. Adequate storage capacity to be maintained and no waste to remain at the completion of works ■ Ensure that waste is removed and disposed of by a licenced contractor on a regular basis to a licenced waste facility ■ Educate staff to recycle waste ■ All waste areas will be kept tidy and all municipal waste is to be placed in the appropriate receptacle ■ Use sealed bins to prevent wind, animals and rain from spreading litter ■ Waste is not to be disposed of in the marine environment or incinerated in vessels at sea ■ Ensure that bins/bags used on the dredgers to store waste are secure ■ Retrieve litter that does enter the water.
14.17 (Section 14.6.6)	**General building material** ■ Store waste separately to avoid contamination with other waste ■ Where possible reuse excess materials on site alternatively remove to recycling facility.

EIS commitment number (EIS section reference)	EIS commitment
14.18 (Section 14.6.6)	**Dunnage and quarantine waste** ■ Waste not to be disposed of in the marine environment or incinerated in vessels at sea ■ Waste to be kept in sealed plastic bags on board until collection by a licensed contractor ■ Waste to be sterilised prior to disposal ■ Record the movement and quantities of regulated and quarantine wastes.
14.19 (Section 14.6.6)	**Green waste (grass clippings and landscaping)** ■ Green waste to be chipped and used onsite for landscaping.
15. Transport	
15.1 (Section 15.4.6.8)	No over-dimensional vehicles that will affect the road network will be used as part of Project activities.
15.2 (Section 15.4.7)	General transport safety will be improved through implementing the following non-infrastructure mitigation measures: ■ Temporary reduction in the speed limit to improve gap acceptance for trucks entering and exiting the traffic stream to and from Landing Road ■ Variable message signage placed in advance of the intersection on the northern and southern approaches to the Landing Road/Guerassimoff Road to provide further warning of the temporary speed limit reduction and trucks turning.
15.3 (Section 15.4.7)	Further traffic counts will be undertaken closer to the commencement year, and the measures above will be reassessed to confirm suitability at that time.
15.4 (Section 15.4.7)	If the location of the Project bund wall material source/quarry changes during the detailed design phase (i.e. not all the bund wall material is sourced from the Targinnie/Yarwun quarry area), a reassessment of the Project potential impacts on the SCRs and local roads, including consultation with DTMR and GRC, will be undertaken.
15.5 (Section 15.6.5)	The dredging contractor will comply with the relevant requirements within the following documents: ■ *Standard for Commercial Marine Activities – Gladstone Region* (DTMR 2017a) and preparation and implementation of the approved Project Marine Execution Plan ■ *Port Procedures and Information for Shipping – Gladstone* (DTMR 2018) ■ *Transport Operations (Marine Safety) Regulation 2016* ■ Dredging EMP (refer Appendix Q1).
16. Aboriginal cultural heritage	
16.1 (Section 16.8.1)	Wherever practicable, construction impacts will be minimised such that important cultural activities (e.g. fishing, knowledge transfer) can continue unabated within the Port Curtis area. To assist in achieving this objective, consultation will continue between GPC and the PCCC in order to ensure that cultural considerations are incorporated into the Project detailed design. Ongoing consultation regarding Project activities that involve disturbance, modification or cumulative impacts to either the land surface or the marine areas will enable appropriate levels of input and ensure that appropriate mitigation programs (inclusive of monitoring programs incorporating PCCC Sea Rangers) are subsequently developed and implemented.

EIS commitment number (EIS section reference)	EIS commitment
16.2 (Section 16.8.2)	Given the importance and cultural significance of the marine portions of the WBE reclamation area, GPC will utilise PCCC Sea Rangers to monitor the potential impacts of Project marine activities as part of implementing the Project EMP and Dredging EMP.
16.3 (Section 16.8.3)	During the design and construction of the WBE reclamation area, the footprint will not impinge on the coastal fringe and the existing buffer between the shoreline and proposed development area will be maintained. However, if the WBE reclamation area does result in direct and/or indirect impacts on the natural foreshore, a terrestrial cultural heritage assessment will be undertaken. Within the marine context, the initial seagrass meadows disturbance will be monitored by PCCC Sea Rangers as part of implementing the Project EMP and Dredging EMP.
16.4 (Section 16.8.4)	As there remains potential for further, as yet undocumented Aboriginal cultural material to be present (most likely stone artefacts) within the Project areas, GPC will implement the New Discoveries provision for incidental finds of Aboriginal cultural heritage found during Project activities provided in Section 10.2 of the Cultural Heritage Protocol (Appendix M).
16.5 (Section 16.8.4)	Before works begin, GPC will use all reasonable endeavours to arrange for all persons (staff and/or contractors) who will be engaged in works and who are likely to have contact with Aboriginal cultural heritage to participate in a cultural heritage induction session. Among other things, these inductions will inform workers what archaeological material may look like and give them clear instructions on what to do if they find anything that could be cultural heritage material. These inductions will be jointly presented by GPC, a suitably qualified cultural heritage practitioner and/or a representative(s) from the PCCC.
17. Non-Aboriginal cultural heritage	
17.1 (Section 17.7)	Known shipwreck locations to be avoided by Project activities
17.2 (Section 17.7)	Prior to dredging activities commencing, undertake a thorough survey (e.g. remote sensing survey using multi-beam or side beam scanning sonar with magnetometer) of the areas to be dredged and engage a suitably qualified and experienced maritime archaeologist to interpret the resultant data to identify any potential shipwrecks for further investigation and management
17.3 (Section 17.7)	Ensure that all employees are suitably trained to identify cultural heritage sites or objects and report the finds to the Contractor's Environment Officer (CEnvO) and maintain a log of all employees who have undergone cultural heritage training
17.4 (Section 17.7)	Inform all employees of their obligations to notify the CEnvO of any cultural finds
17.5 (Section 17.7)	Develop an accidental cultural heritage discovery reporting process and form that includes a clear chain of custody in the report (e.g. details of the person/s who made the discovery, date of discovery, description of discovery, location of discovery, etc). The reporting process is to include roles and responsibility regarding the handling and reporting of cultural heritage discoveries.
17.6 (Section 17.7)	Engage an independent archaeologist for advice upon making a cultural heritage discovery
17.7 (Section 17.7)	Should an item or object of historical non-Aboriginal cultural heritage significance be found during Project activities the following measures will be adopted: ■ All work at the location of the potential find must cease and the CEnvO will be notified ■ The CEnvO will notify GPC's Environment Manager, who will undertake appropriate actions and provide management recommendations to the CEnvO ■ GPC's Environment Manager will notify the DES of any relevant finds in accordance with Section 89 of the Heritage Act.

EIS commitment number (EIS section reference)	EIS commitment
18. Social impact assessment	
18.1 (Section 18.9.1)	A Project Liaison Person will be appointed for the duration of the Project activities to be the main and readily accessible single point of contact for affected parties, stakeholders and the wider community. The contact details will be made available through a Project website and prominently advertised.
18.2 (Section 18.9.1)	A Social Impact Management Plan will be prepared for the Project (refer Appendix N3) and will include as a minimum: ■ A summary of the social impacts and affected stakeholders as identified through the SIA process ■ Describe GPC's impact management activities and commitments (mitigation strategies) to minimise negative social impacts and to enhance benefits for the community and other stakeholders ■ Describe the mechanisms to monitor the impacts to adjust mitigation strategies and Action Plans ■ Identify stakeholders to be included in the development and implementation of mitigation strategies throughout the life of the Project ■ Determine a timeframe for the development and implementation of the identified management strategies ■ Provide guidance to GPC's social performance activities.
18.3 (Section 18.9.1)	Prior to the commencement of the Project's construction works (or individual stages), a Communications Plan will be prepared and implemented. The purpose of the Communications Plan is to set out procedures detailing how communication with affected parties, stakeholders and the wider community, will occur throughout the pre-construction and construction phases of the Project. As a minimum, the Communications Plan will include: ■ Communication about the timing, duration and likely impacts of construction works (or stages) ensuring activities and engagement with the following sensitive receptors: – Facing Island residents' potentially affected by noise and vibration associated with Project activities – Commercial fisher groups and recreational fisher groups (including tourism operators) – Maritime users (such as small vessel operators, commercial fishing fleet, recreational fishers and tourist operators). Communication will include signage and advertising advising of restrictions and their period of applicability, including safety information for recreational boating around dredging vessels. – Users of the rock haulage routes (Targinnie/Yarwun community and local businesses) – Residents' potentially affected by significant landscape character changes associated with Project activities ■ A complaints and response process.
18.4 (Section 18.9.1)	Continue the SRG (and other groups where necessary) to minimise potential impacts during the Project's construction through awareness of Project activities and provide input into more detailed design and feedback on Project mitigation measures
18.5 (Section 18.9.1)	Continue ongoing engagement with Traditional Owners about their values and traditional fishing grounds. Engagement will be undertaken in accordance with the Cultural Heritage Protocol (refer Appendix M). If an unknown item of tangible cultural heritage is uncovered during construction, work will cease until Traditional Owners are consulted as per the procedures set out in the Cultural Heritage Protocol.
18.6 (Section 18.9.1)	A Workforce Management Plan will be implemented to mitigate workforce influx and cumulative workforce influx impacts. This will be in place prior to Project construction works commencing and will be reviewed annually over the duration of the Project's construction activities.
18.7 (Section 18.9.1)	Adherence to mitigation measures identified in chapters for water quality, nature conservation and noise and vibration.

EIS commitment number (EIS section reference)	EIS commitment
18.8 (Section 18.9.1)	Mitigation effectiveness will be monitored through complaints received, by maintaining a grievance register and reviewing on a monthly basis.
Workforce Management Plan	
18.2 (Section 18.9.2)	The Project construction workforce will be managed by adopting the following principles: **Workforce behaviour** ■ Adhere to relevant legislation for construction workers, including the *Coal Mining (Safety and Health) Act 1999* and *Work Health and Safety Act 2011*. ■ Develop a workforce code-of-conduct which outlines acceptable behaviour, standards for work performance and appropriate ways of interacting with the residents of Gladstone. ■ Implement the code-of-conduct by ensuring that this is included in all contract documentation as well as in training and induction programs before workers commence their employment. Ensure that abiding by the code-of-conduct is a condition of employment and a breach of the code could result in automatic dismissal. Proactive 'refresher' training will be undertaken at regular periods throughout the construction period to minimise the risk of breaches. **Workforce recruitment** ■ GPC will work with the appointed dredging contractor and the bund wall construction contractor to develop appropriate recruitment and training programs as relevant and in accordance with the appointed contractor's labour procurement policies. This will include identifying roles that can be filled by local workers, with a focus on recruitment and training opportunities for apprentices, trainees, Aboriginal and/or Torres Strait Islander peoples, women, unemployed or under employed people, secondary school students and graduates. ■ Utilise local and regional recruitment and training providers where possible and practical to meet vacant position requirements. **Accommodation planning** ■ GPC will work with local real estate agents, and residential dwelling and unit providers in the Gladstone area to secure long term accommodation for non-local Project employees ■ During the low and shoulder season, utilise the holiday accommodation market where possible and practical to meet any short term accommodation need for Project employees. **The local community** ■ Wherever possible and practical, procure personnel, goods and services locally to enhance benefits to the local economy. Prepare and implement a Local Industry Procurement and Participation Plan if not already developed. ■ Promote contribution to and connection with the local community. For example, developing a workforce sporting team and playing in local competitions can be a way of facilitating connections with the community.
19. Economics	
19.1 (Section 19.7)	In the lead-up to, and during dredging activities, GPC will continue to consult with its customers to inform them of upcoming activities and discuss any potential Project impacts on their operations
19.2 (Section 19.7)	In the lead-up to, and during dredging activities, GPC will continue to consult with local commercial fishing groups so that any issues associated with the dredging program and its interaction with commercial fishing can be identified and addressed early

EIS commitment number (EIS section reference)	EIS commitment
19.3 (Section 19.7)	While GPC employees will be involved in the construction management of the Project, and potentially components of the establishment of the WBE reclamation area outer bund wall and BUF construction, other Project activities will not be GPC employed positions. GPC recognises it has a role to play in developing employment, training and supply opportunities for local people. As relevant, GPC will work with its contractors to develop local employment and training opportunities during construction, focusing on skills development for school leavers, women, Aboriginal people and unemployed/underemployed. During construction and maintenance, where relevant, GPC will also encourage the organisation and its contractors to develop strategies to assess capacity and cost-effectiveness of sourcing goods and services from the local, regional and wider State economy.
20. Hazard and risk	
20.1 (Section 20.5.1)	The Project activities will comply with regional Cyclone Warning procedures and the Cyclone Contingency Plan for vessels within the Port. A stockpile of armour material will be held at the Targinnie/Yarwun quarry, sufficient to cover any exposed core material at the WBE reclamation if a cyclone were to approach Gladstone.
20.2 (Section 20.5.2.1)	Any storage of dangerous goods and substances within the WB and WBE reclamation areas compound will be within a designated secure area contained by a leachate bund as per best practice arrangements.
20.3 (Section 20.5.2.4)	The WB and WBE reclamation areas will be fully enclosed with appropriate fencing to restrict unauthorised access to the site. Site access will be through a principal secured entry point which will only be accessible by authorised site personnel. Any visitors to the site will be subject to strict admittance procedures.
20.4 (Section 20.6.1)	Designers must test and analyse the risk associated with their designs and provide sufficient information to end users. The designer may also be requested to provide current information about the design and relevant risks associated with its use.
20.5 (Section 20.6.2)	The Project will prepare a Cyclone Management Plan which will formulate procedures for cyclone preparedness for both landside and water based activities as well as response measures.
20.6 (Section 20.6.3)	The relevant contractor will prepare an EMP for the Project activities (i.e. construction of the WBE reclamation area bund walls, BUF, installation of navigational aids and maintenance activities on the reclamation areas) based on the plan provided in the Project EMP (refer Appendix Q2 in the EIS).
20.7 (Section 20.6.4)	The dredging contractor will prepare a DMP for the Project based on the plan provided in Appendix Q1 in the EIS. The DMP will contain management and mitigation measures to minimise the impact of the Project dredging activities on the environment and to achieve worker and public safety.
20.8 (Section 20.6.5)	An Emergency Response Plan for the Project will be developed as part of the Project's health and safety management system and the environmental management of the Project prior to commencement of the construction activities. The systems will be updated as works transition through the Project activity cycle or in response to legalisation or guidance change.
20.9 (Section 20.6.5)	Project safety inductions will be required to specify emergency response procedures for all Project activities with rescue and response procedures defined in addition to onsite first aid and infrastructure and processes.
20.10 (Section 20.6.5)	The WBE reclamation area construction contractor will prepare an emergency plan which will include procedures to address severe climatic events such as cyclones and minimise where practicable the potential environmental impacts from the reclamation works.

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20.11 (Section 20.6.6)	A Health and Safety Management Plan will be prepared for the Project based on the GPC Health and Safety Policy. Work procedures will be implemented by GPC and contractors during all phases of the Project to enable safe and efficient work practices. Each work procedure will cover a different activity (e.g. stabilisation, refuelling, passenger transfer boat to vessel). These procedures will be reviewed regularly and updated to reflect any Project activity specific requirements which may arise. The procedures with align with the appropriate Australian Standards as per the Guide to Standards for Occupational Health and Safety (SAI Global 2014). All Project contractors will be required to meet the requirements of the Plan as minimum.